ITOGUARD LJC6700

A FLUORINATED WATER OIL AND GREASE RESISTANT AGENT FOR PAPERS

ITOGUARD LJC6700 is a new fluorinated oil and grease resistant agent for paper and paper board. ITOGUARD LJC6700 imparts excellent oil, grease and water resistance properties to paper and paper board

PROPERTIES

- **Appearance :** Pale Yellow to Brown Liquid
- **Ionic Character** : Cationic
- **pH :** 2 .0 – 2.5
- **Solubility :** Easily diluted in water
- **Solids content :** 21%
- **Viscosity :** less than 50mPa S

APPLICATION

In External Sizing Method (size press, coating):

- **ITOGUARD LJC6700 :** 2 - 8 %
- **pH :** less then 6.5
- **Drying :** 100 - 130°C

In Internal Sizing Method (wet end):

- **ITOGUARD LJC6700 :** 0.5 - 1.2 % (as solid content)
- **pH :** 4.5-6.5
- **Drying :** 100 - 130°C

DISCLAIMER

The information herein offered is based on the best of our knowledge at present. However, we are not able to guarantee these matters, as the result of application may vary according to conditions adopted. Preliminary tests are, therefore, recommended in all cases. Please refer to MSDS regarding handling of the products.

CHARACTERISTICS

1. Paper and paper board processed with ITOGUARD LJC6700 show excellent oil and grease resistance properties and provides extended resistance to corn oil, soya oil, coconut oils, lard and chicken fat and starches.
2. Paper and paper board processed with ITOGUARD LJC6700 shows excellent oil and grease resistance properties against hot oils from fried or baked foods, such as French fries, fried chicken and pizza.
3. ITOGUARD LJC6700 can be applied to either an external sizing method (size press, coating) or an internal sizing method (wet end).
4. ITOGUARD LJC6700 shows improved stability to non-ionic and anionic starch compared with older grades.
5. ITOGUARD LJC6700 has improved stability to water hardness and pH compared with older grades.
6. ITOGUARD LJC6700 is less sensitive to processing shear compared with older grades.
7. ITOGUARD LJC6700 gives excellent performance in wet end applications.
8. ITOGUARD LJC6700 is less likely to foam and causes less rusting compared with older grades.
9. ITOGUARD LJC6700 is non-flammable.
10. ITOGUARD LJC6700 does not contain perfluorooctanoic acid (PFOA), longer chain length perfluorocarboxylic acids (PFCAs) or their precursors (below the detection limit). (longer chain length; Carbon number >8).
11. ITOGUARD LJC6700 is FDA and BFR approved and is TSCA listed.

MAGNACOLOURS®
IMAGINATION INK™

MagnaColours® Limited
Upper Cliffe Road,
Dodworth Business Park,
Barnsley, S75 3SP, UK

T: 00 44 (0) 1226 731751
F: 00 44 (0) 1226 731752
E: info@magnacolours.com
www.magnacolours.com

Company registered in
England No. 01378495,
VAT No. GB 997 3172 70

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Size Press Treatment

General Description

External sizing of ITOGUARD LJC6700 at size-press provides excellent oil and water resistance with various kinds of binders.

Generally the external sizing method is more efficient and effective than other applications, such as wet end applications.

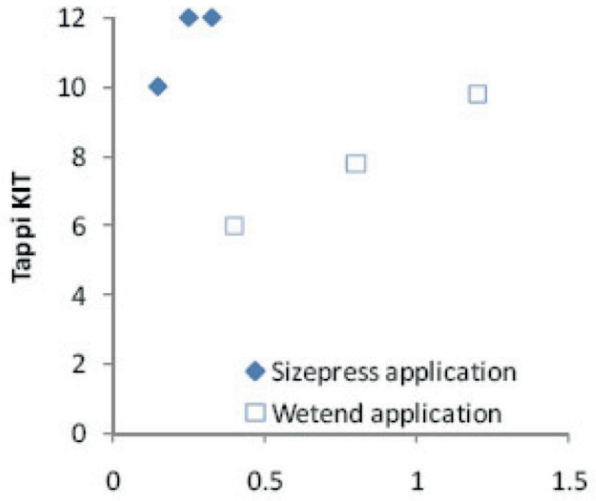

Fig.1 Comparison of dry % on fibre of ITOGUARD LJC6700 efficiency between size-press and wet end application.

Application Level

Adding 0.2 – 1.0% of ITOGUARD LJC6700 (dry solid) in the size-press solution will provide good oil, grease and water resistance on paper and paperboard.

Pre-sized Base Paper ; Use of Surfactants

Penetration of sizing solution into paper is the most important factor for good performance.

Unsized or weakly-sized base paper is recommended.

If pre-sized (internally sized) base paper is used, addition of a suitable cationic or neutral charge surfactant is recommended to aid size solution penetration.

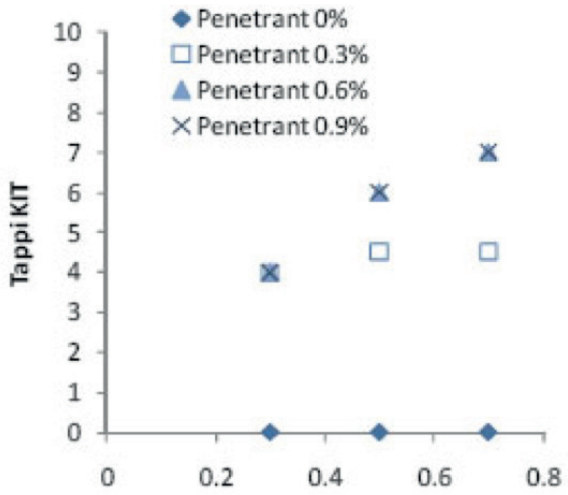

Fig.2 Effect of surfactant on performance on sized base paper at size-press.

- **Sized base paper :** 50g/m2, Bleached, Cobb 60=19
- **Penetrant :** Non-ionic
- **Others :** Oxidized starch (3% dry)

Compatibility with various chemicals and starches on size press

ITOGUARD LJC6700 has good compatibility with the following: oxidised starch, hydroxyethylated starch, cationic starch, enzymatic starch and polyvinyl alcohol.

ITOGAURD LJC6700 is easy to use within your current size-press solution without drastic changes to its chemical composition.

Wet End Applications

ITOGUARD LJC700 can be applied at the wet-end of your paper machine. Oil and grease proof paper treated with ITOGURD LJC6700 at the wet end has good oil resistance, even if the paper is creased.

ITOGUARD LJC6700 exhibits improved tolerance to adverse conditions present in paper furnishes (high, pH; ash levels) when compared to first generation cationic fluorochemicals.

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Unlike anionic fluorochemicals ITOGUARD LJC6700 does not require other binders in order to work properly. ITOGUARD LJC6700 has the ability to self-affix to paper pulp.

Application Level

Adding 0.2 – 1.2% of ITOGUARD LJC6700 (dry solid) on pulp slurry will provide good oil, grease and water resistance on paper and paperboard.

Compatibility with Wet End Chemicals

ITOGUARD LJC6700 can be used in combination with the following chemicals; Cationic coagulants, dry strength agents, drainage aids and retention aids.

Use of a retention system will help fix anionic trash to the building sheet and improve ITOGUARD LJC6700's self-fixing performance. (Fig. 3)

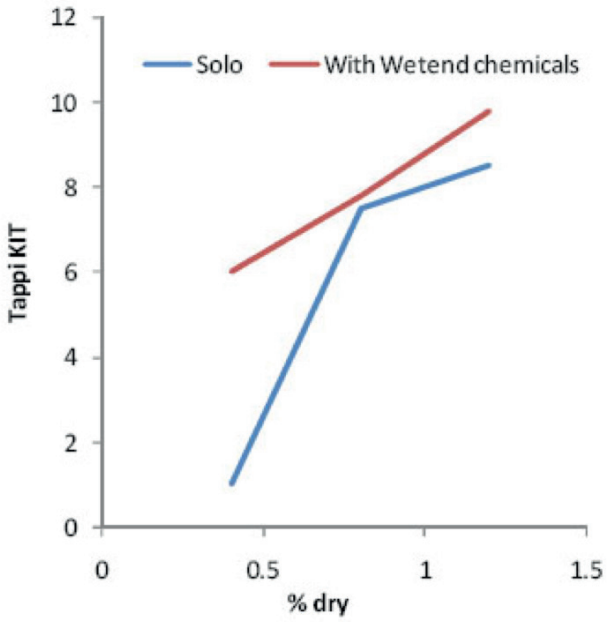

Fig. 3 Effect of wet-end retention chemicals

- **Pulp :** Hardwood/softwood (7/3) (bleached chemical pulp)
- **Freeness :** Hardwood 350 / softwood 550
- **Solo :** Only ITOGUARD LJC6700 was added to pulp slurry
- **With wet end chemicals :** Common wet end retention chemicals (cationic/anionic system were added prior to ITOGUARD LJC6700 addition
- **Basis weight :** 60g/m2

Pulp Furnish

Fresh chemical pulp of low refinement (freeness) is recommended for best efficiency.

Recycled pulp fibre usually contains calcium carbonate and other minerals which impact negatively on the performance
(See Fig. 4 overleaf)

Other Considerations

ITOGUARD LJC6700 addition point will effect performance significantly. A point near the end of wet-end processing after the pumps and refiner is suitable.

Sizing agents such as AKD, ASA and rosin are unnecessary because ITOGUARD LJC6700 has inherent water resistant performance when used on paper.

AKD or anionic rosins may have a negative effect on grease proof performance when used at excessive levels.

Fillers and/or Ash Content

ITOGAURD LJC6700 has improved stability in conditions where the absence of ash cannot be assured.

ITOGUARD LJC6700 is tolerant of slight levels of calcium carbonate (less than 1% on dry fibre) when the furnish is pretreated with a cationic fix agent.

Excessive amounts of calcium carbonate in the furnish must be avoided at all costs. High levels of calcium carbonate will destabilise the ITOGUARD LJC6700 in solution, leading to severe foaming and depositing on equipment. Neither of these problems can be solved by simply adding defoaming agents to the furnish.

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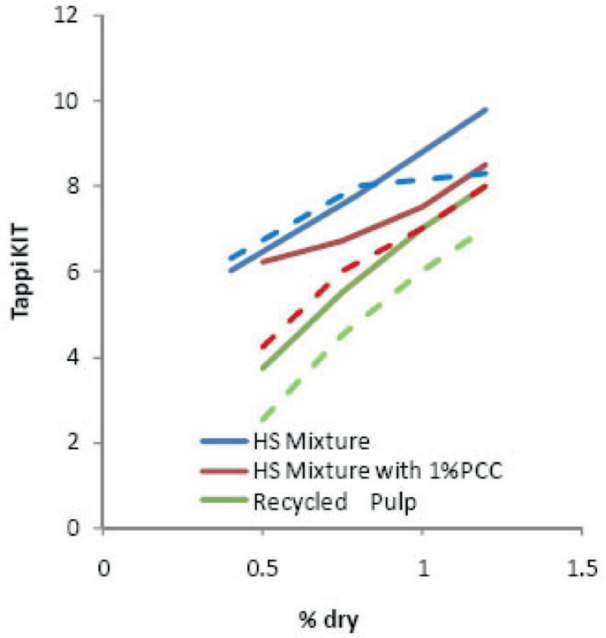

Fig. 4 Effect of furnish and $CaCO_3$ on ITOGUARD LJC6700 and ITOGUARD LJC6600 performance.

- **Solid Lines :** ITOGUARD LJC6700
- **Broken lines :** ITOGUARD LJC6600
- **HS Mixture :** Hardwood/Softwood (7/3)
- **HS Mixture with 1% PCC :** 1% PCC was added to above HS mixture
- **Recycled Pulp :** Laboratory made recycled pulp from MOW and hardwood pulp (7/3)
- **Other Chemicals :** Common wet end retention chemicals (cationic/anionic system were added prior to ITOGUARD LJC6700 / ITOGUARD LJC6600 addition
- **Basis weight :** 60g/m2

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